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ABSTRACT

This is a progress report of a project in the process of developing an interdisciplinary secondary school curriculum on the Canadian urban environment. The primary goal is to encourage constructive involvement in urban life and community decision-making, and develop a personal and social competence that will engender a greater commitment to the city which is growing and changing. The concepts come from a variety of disciplines: 1) anthropology; 2) civil engineering: services and utilities; 3) ecology: the ecosystem and the utilization of resources; 4) economics: growth, role of the city, and business; 5) landscape architecture: site, ecology, aesthetics; 6) political science: decision-making, political history of the city; 7) psychology: the individual, communication, social interaction and self concept; and, 8) regional planning: the interdependence of communities. Breifly, the intended learning outcomes include intellectual concepts, knowledge, and attitude change. The project staff has been working with students to develop and organize activities to cause such change or nourish positive attitudes in order to cope effectively within the community. Simulation games were tried, and work-studies in the community began. Intuitively, the students related their work to the social sciences. The games used and the sources of information for the staff area appended along with the future plans of the project. (Author/SBE)

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SP 001 949

CANADIAN
URBAN
DYNAMICS

A Model for Student Involvement in the Urban Setting

June, 1971

# Western Curriculum Project on Canada Studies

ED055017

Project Center

WINNIPEG, MANITOBA

Participating Schools:

Churchill High School, Winnipeg School Division
West Kildonan Collegiate, Seven Oaks School Division

Project Personnel:

| | |
|---|---|
| Brian R. Chappell | C.H.S. |
| Richard J. Harbeck | W.K.C.I. |
| James G. Nowell | C.H.S. |
| J. Brian Trump | C.H.S. |

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Frankly speaking ...

CONSULTANTS TO PROJECT

A. Special Consultants:

City Planning

Prof. Heidehiko Tanimura B.Sc. (Eng.), (Tokyo U.), M.Sc. (Eng.), (Tokyo U.), M.C.P. (Man.) An Assistant Professor with the Department of City Planning at the University of Manitoba.

From the city planning point of view Prof. Tanimura has been the sounding block for our ideas, concepts, and data. His suggestions as to the structuring of our model have been closely considered by the team. His help is being sought in verifying and adjusting our concepts of urban phenomena. He will be our main consultant for the development of our simulation.

Landscape Architecture

Mr. Doug Patterson, M.L.A. (Michigan)

A source of information about the city and its component parts - physical, political, and legal.

As a landscape architect, Mr. Patterson has contributed to the team's knowledge and awareness of the urban environment. As a graduate student Mr. Patterson studied under Ian McHarg, and at the university level has experimented with a number of simulations.

B. General Consultants:

Having developed the objectives and basic outline for the model with the assistance and recommendations of Messrs. Patterson and Tanimura, we confronted representatives of the various disciplines with the following questions:

> What concepts, attitudes, values and perspectives must students master in order to be capable of the kinds of behaviour that comprise the best form of coping with the urban environment

in which they live? What priorities would be most useful in helping students to master these concepts?

Anthropology: Clarence F. Makin, M.A.

His research projects include sociological studies with regard to the concept of community in Western European society and an anthropological survey of selected minority groups in metropolitan regions. (Contact was made with Mr. Makin by Brian Chappell while travelling in South-east Asia. Mr. Makin is involved in curriculum development projects in Western Australia.)

Ecology: Royce E. Longton, B.Sc. (Hons), Ph.D. (Birm)

Currently, Dr. Longton is a professor in Ecology at the University of Manitoba. His work has included extensive research in the Antarctic.

Economics: Ruben C. Bellan, B.A. (Man.), M.A. (Tor), Ph.D. (Columbia)

Dr. Bellan is the Dean of Studies at St. John's College, University of Manitoba. He has worked extensively in the area of economics and economics of urban areas. He feels that "current urban problems, to be fully understood, must be appreciated as the contemporary profiles of enduring issues that have been incessantly reshaped in the past, and will no doubt continue to be reshaped in the future". Dr. Bellan's latest book, "The Evolving City" is noted in the bibliography.

Political Science: Philip H. Wichern, B.A. (Colorado), M.A., Ph.D. (Minnesota)

Dr. Wichern's doctoral thesis deals with urban affairs and concentrates on the politics of urban fringe areas in the Minneapolis-St. Paul region. He is a professor of urban politics at the University of Manitoba, and is currently acting as a consultant for C.M.H.C. in the area of public housing.

Psychology: Bruce Pellegrin, B.A. (U.B.C) L.Th. (ATC Vancouver) M.S. (Stout), Ph.D. (Kansas)

Dr. Pellegrin is an Assistant Professor in the University of Manitoba Counselling Services Department. He is director of the training program with the Manitoba Human Relations Association. Dr. Pellegrin has wide and varied experience in group work. He has acted as consultant for both private and government sectors.

Regional Planning: Mario Carvalho, B.Arch. (Harvard)
M.C.P. (Sg. of Penn.)

Prof. Carvalho was Director of a report by students of the department of the city planning the Winnipeg Urban Region and more recently co-author of the Eastman Development Study. He is well versed in field work and is a source of knowledge on investigations of urban regions.

Urban Planning: Rev. J. E. Page S.J., B.A. (Loyola), B.Sc. (C.E.), M.C.P. (Man), B.Th. (Tor) Ph.D. (Penn.), M.E.I.C., T.P.I.C., A.I.P.

Dr. Page is the author of many papers on Urban and Regional Planning. He is also past director of the Centre for Settlement Studies at the University of Manitoba.

Civil Engineering: Basil Rotoff, B.Sc. (C.E.)(Man), M.C.P. (Man)

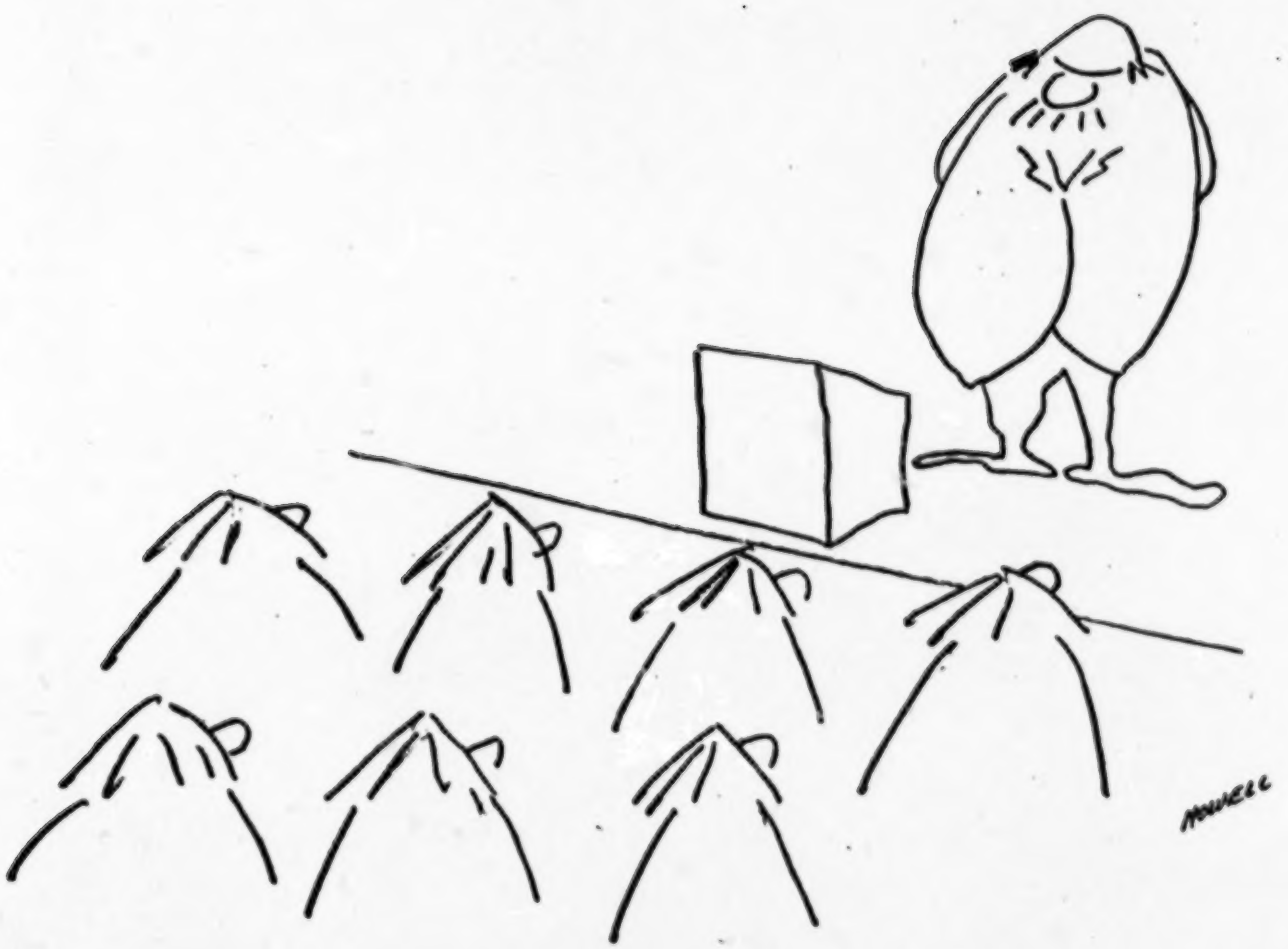
Prof. Rotoff is a member of the Department of City Planning, University of Manitoba. His training in Civil Engineering will be of value to us in planning simulations, case studies and field studies.

Two major disciplines, history and geography, do not have representative consultants in our work. Consultants from these disciplines will be contacted at an early date in the future. Every consultant above included geographical and historical components in response to our questions. We have included these views into this report.

The problem, stated in its simplest terms, is Canadian student anonymity in the Canadian urban environment. For a majority of students there is the lack of a positive feeling (in terms of personal impact, worth and awareness) within this urban environment.

For too many of Canada's young people the above mentioned phenomen of Canadian life has too often led to insularity and apathy. The student perhaps views the urban environment as a shallow urban wilderness; his vision is narrow and his feeling of personal importance in this wilderness (characterized by the often heard question, "Well, what can I do?") is negligible.

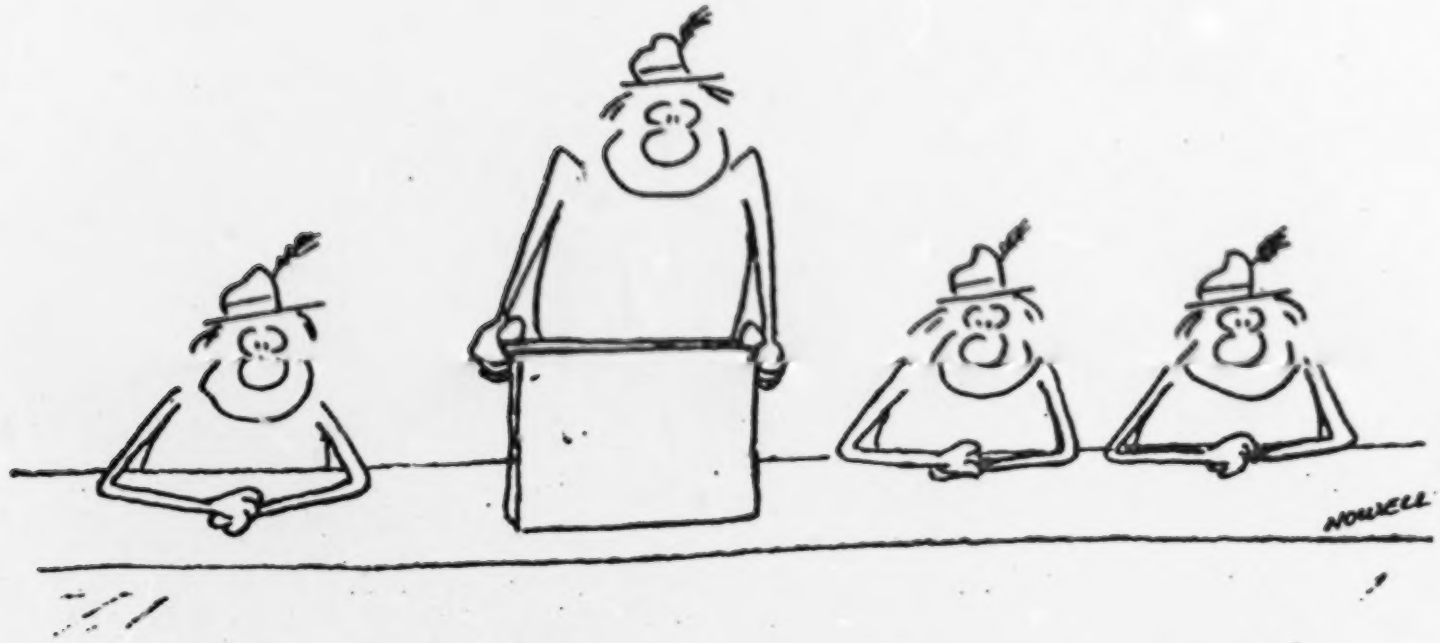
We, as educators, realize that practically all standard educational situations can be related to phenomena prevalent within the growing urban environment. Urbanization for us means an integration of educational experiences within the realm of all the commonly accepted disciplines as taught in our schools. Along with other notable authorities our consultants have supported this contention, even though each expert in his own right spoke to his particular discipline. Urban problems may well be solved in part by schools improving their own urban environmental relationships, thereby providing an atmosphere in which young people can develop a concern and a feeling of responsibility for their cities. The team feels a need to achieve within Canadian students an intense urban awareness as well as the desire to take an active part in community decision making.



*Above all, colleagues, we must stress the imperative needs and pertinent necessities: avoiding the ignoble pitfalls of educators' pedantry and pretentiousness...*

The urban environment is as much a part of young Canadians today as was the countryside yesterday to most of their parents and grandparents. This paradoxical impact of city life, industrialization and technological change is in fact of life for seventy per cent of our fellow Canadians. Within twenty years, more than eighty per cent of Canada's population will reside in ever changing urban areas. Surely there is a need for citizens, young and old alike, to become more aware of this urban

environment! We sincerely feel that there is a pressing need to encourage fellow educators to develop in themselves and among youth an exciting sensory awareness. We wish to encourage constructive involvement in urban life and develop a competence that will engender a greater commitment to the city by the inhabitants. These are qualities little fostered and cultured in Canadians until now.

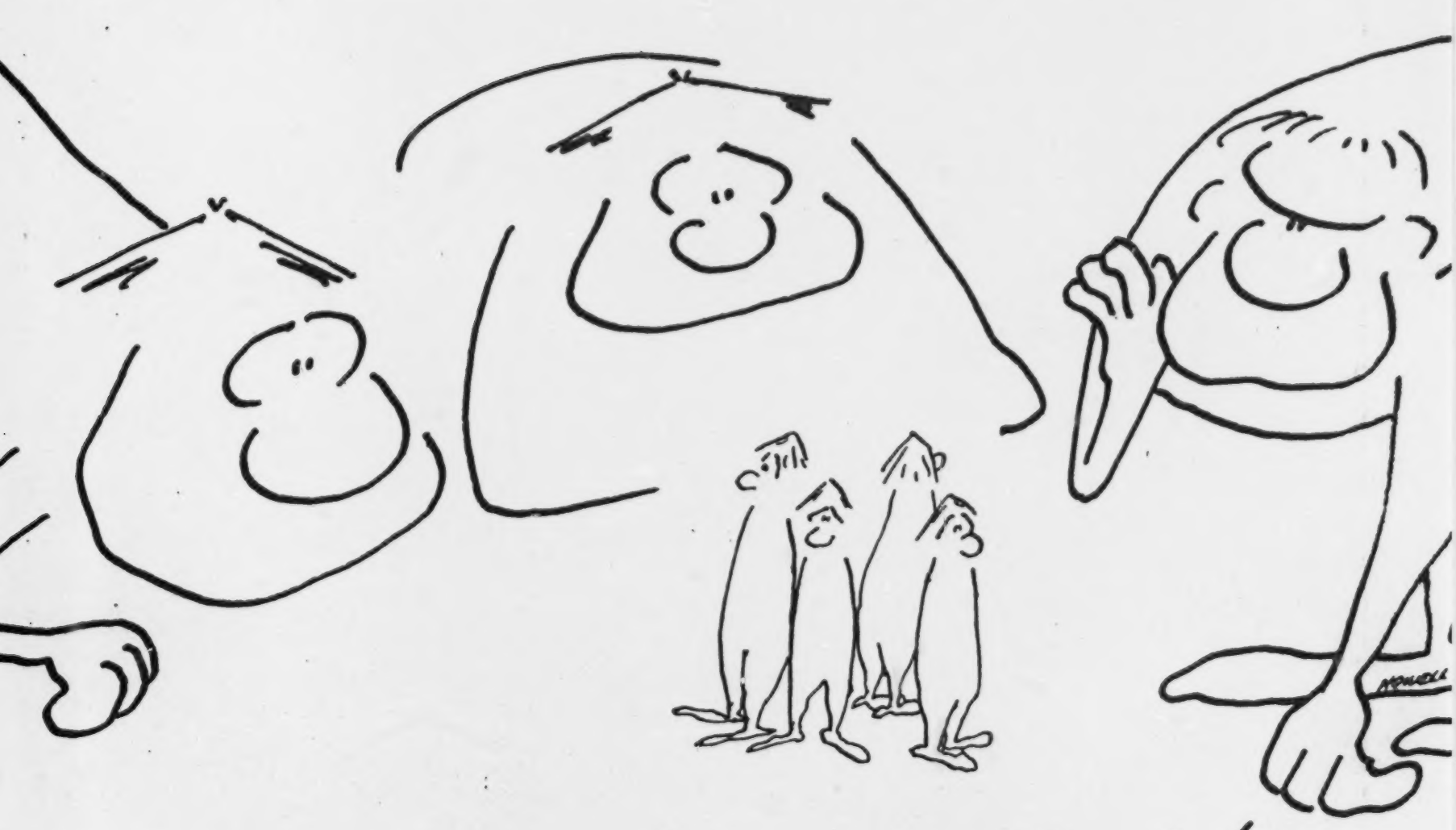



*... and it is essential that we teach children to think and act for themselves.*

The following is a report on the results of our readings and discussions over the past few months as well as ideas collected from our consultants. Since a major part of our year's work has taken place in our classrooms and local communities we will also include some comments related to that work. We will report objec-

tively and briefly the main concepts in the substantive domain (intellectual content) that are pertinent to our project. This merely represents a report of some of our findings.

At the outset it may be interesting to note that each of our consultants considered it personally important that it is the integration of the wide range of disciplines and the resulting educational experiences that contribute to wholesome intellectual and personal growth.

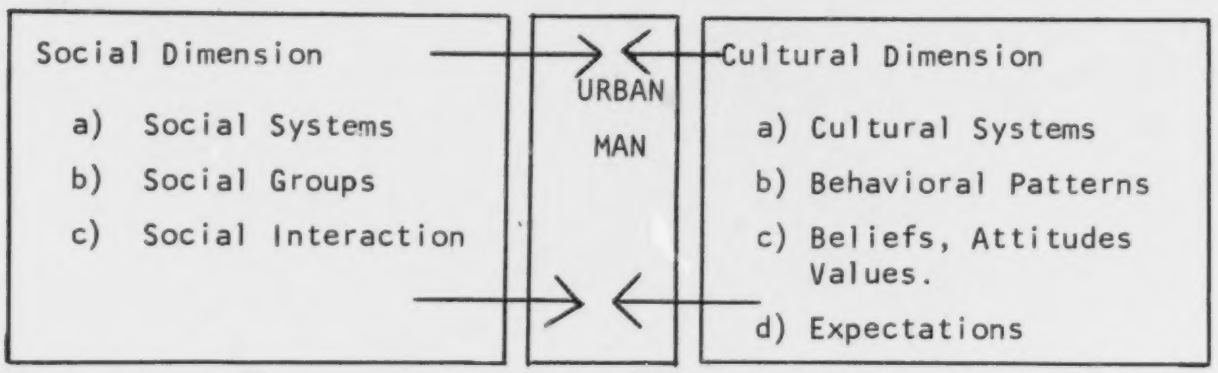


*You're being watched... act natural!*

The Academic Inputs, in the form of concepts, come from a variety of disciplines. Listed here are the disciplines and those concepts (pertinent to Canadian Urban Dynamics) derived from them.

Anthropology

1.




2.

Totally different reactions of man, depending on socio-cultural screen, to the environment.

Civil Engineering

1. Civil Engineering is closely linked to political decision-making (especially at municipal level).
2. Facets of Civil Engineering that are evident in urban life: Services and Utilities.
3. The problem of changing priorities.
4. The impact of an engineering project on society.

Ecology

1. Ecosystem - interdependence - part of the cycle. Many ecosystem organisms (man included) and their environment interact to the extent that the disruption of either causes disruption of the whole. Man plays a leading role in the all encompassing single global ecosystem.

2. Renewable and non-renewable resources in the widest sense. A common sense utilization of our resources with the future in mind. Education about nature's way of re-cycling and how the delicate balance can be destroyed by fool-hardiness.
3. Location of city in relation to environment, and also the relation of places within the city.
4. The environment sustains - pollution lowers sustaining capabilities.
5. Size - sprawl
6. Balance between competition and co-operation in the environment.

Economics.

1. Growth. There are two types considered. The first is physical growth of the city. The second is the concept of industrial expansion.
2. Basic and non-basic economic activities in relation to the city.
3. Economic role of the city locally, nationally, and internationally.
4. Wholesale, retail, and investment services.

Landscape Architecture.

1. Site and situation.
2. Urban Ecology.
3. Aesthetics.

Political Science.

1. Political framework for decision making.
2. Influence of pressure groups on the political process.
3. History of political institutions in the city.

Psychology.

1. Position of individual in institutional framework.
2. Attitudes based on socio-cultural background.
3. Social interaction as a function of self-concept.

Regional Planning.

1. The perspective of a region.
2. Rural-urban interdependence.
3. Interdependence of communities.
4. Growth or decline of communities.

Overall Concepts.

A number of general concepts can be related to all the disciplines.

a) alternative policies in four areas: 1. political
   2. socio-cultural
   3. economic
   4. personal sphere

b) vested interests.

c) historical perspectives.

We have engaged in several activities with our students to determine some effective ways of dealing with these concepts. Some have been quite interesting and students have been keen to admit to positive attitudinal changes. Others have been less successful, usually ending up as closed academic exercises only. However, we feel that within our grasp are the tools for developing some exciting and effective learning situations. We are confidently looking ahead to a consolidation of the more successful experiences.

There is one fact of which we are convinced: the disciplines, independently of each other, do not seem to satisfactorily provide the primary sources for our activities. The urban environment as the integrating factor is itself the source. At this

point we should reiterate that our consultants, independently of each other, arrived at the same conclusion. They suggested (and we were quick to agree) that three basic priorities exist:

1. Interdependence

(This implies that all factors of the urban environment affects everyone in that environment).

2. Integration

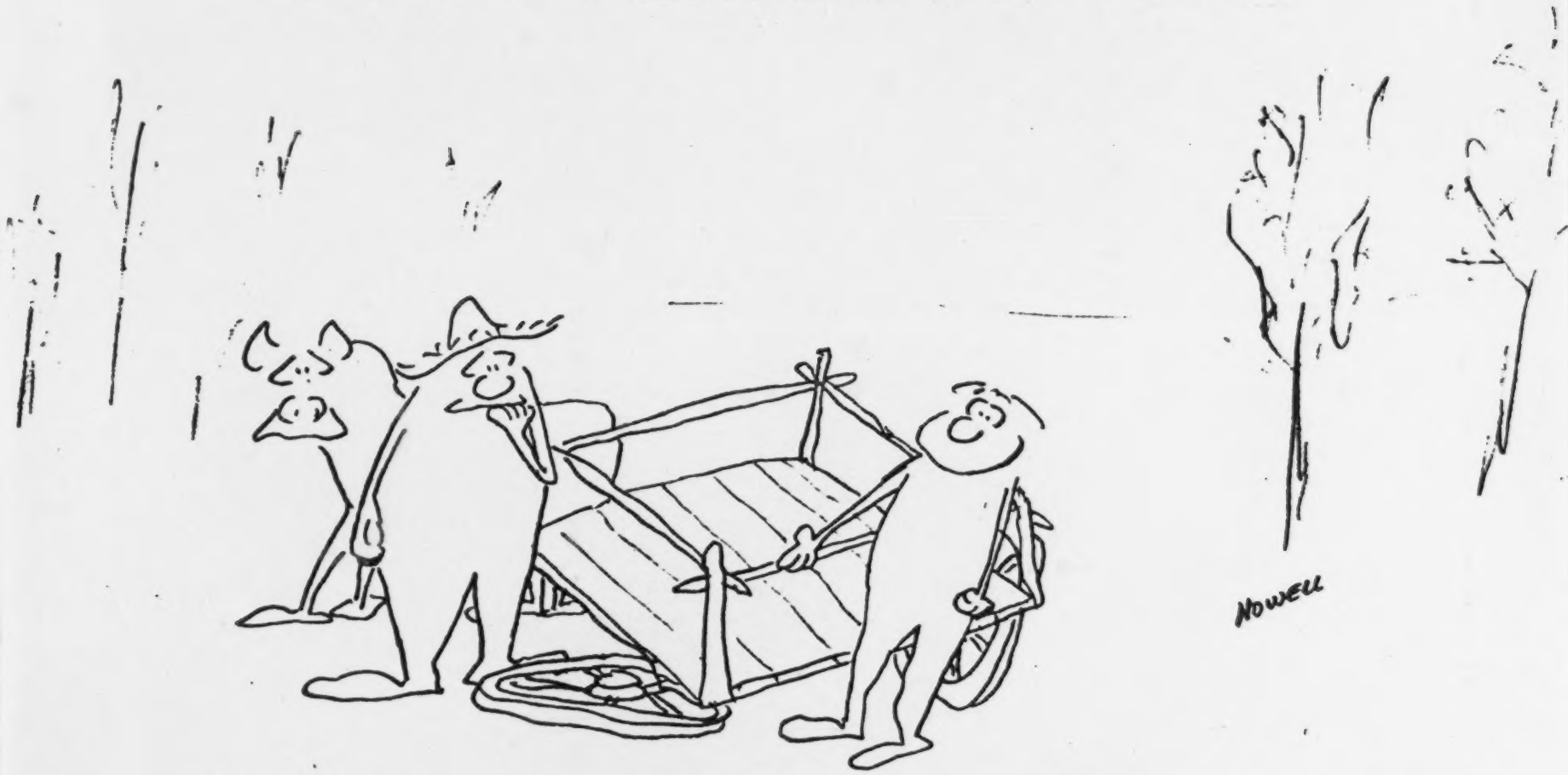
(Data from a wide range of sources is fitted into identifiable patterns).

3. Communication

(There is both the sending of stimuli and the response to stimuli).

Our readings on the urban environment have provided us with a reasonable background knowledge. The aforementioned priorities will further lead us to the development of related activities.

We recognize the existence of two types of intended learning outcomes (I.L.O's). The first deals with the intellectual concepts and knowledge (substantive domain), and the second deals with attitudinal change (affective domain). Both are important.




*Perhaps we could approach this problem integrating the substantive and affective domains.*

Attitudinal change is the result of the sensory awareness that we mentioned earlier. Each team member, in trying to affect a positive attitudinal change, has, for the past months, been working with the students to develop and to organize suitable activities to cause such a change, or to strengthen and nourish

already existing positive attitudes. Our hope is, that in performing such work, students will learn to cope effectively within the community. It is the ability to sense something, to perceive accurately, and to communicate, that is the crucial objective.

The team has had a lot of fun with different resources and activities related to Canadian Urban Dynamics. Many good simulation games are on the market and we have had pleasing results from a few. Urbandyne, New Town, Extinction, Future, and Pollution have promoted a number of comments from the students.

"These simulations put me off."

"For the first time I'm interested!"

"I never knew farming was so risky."

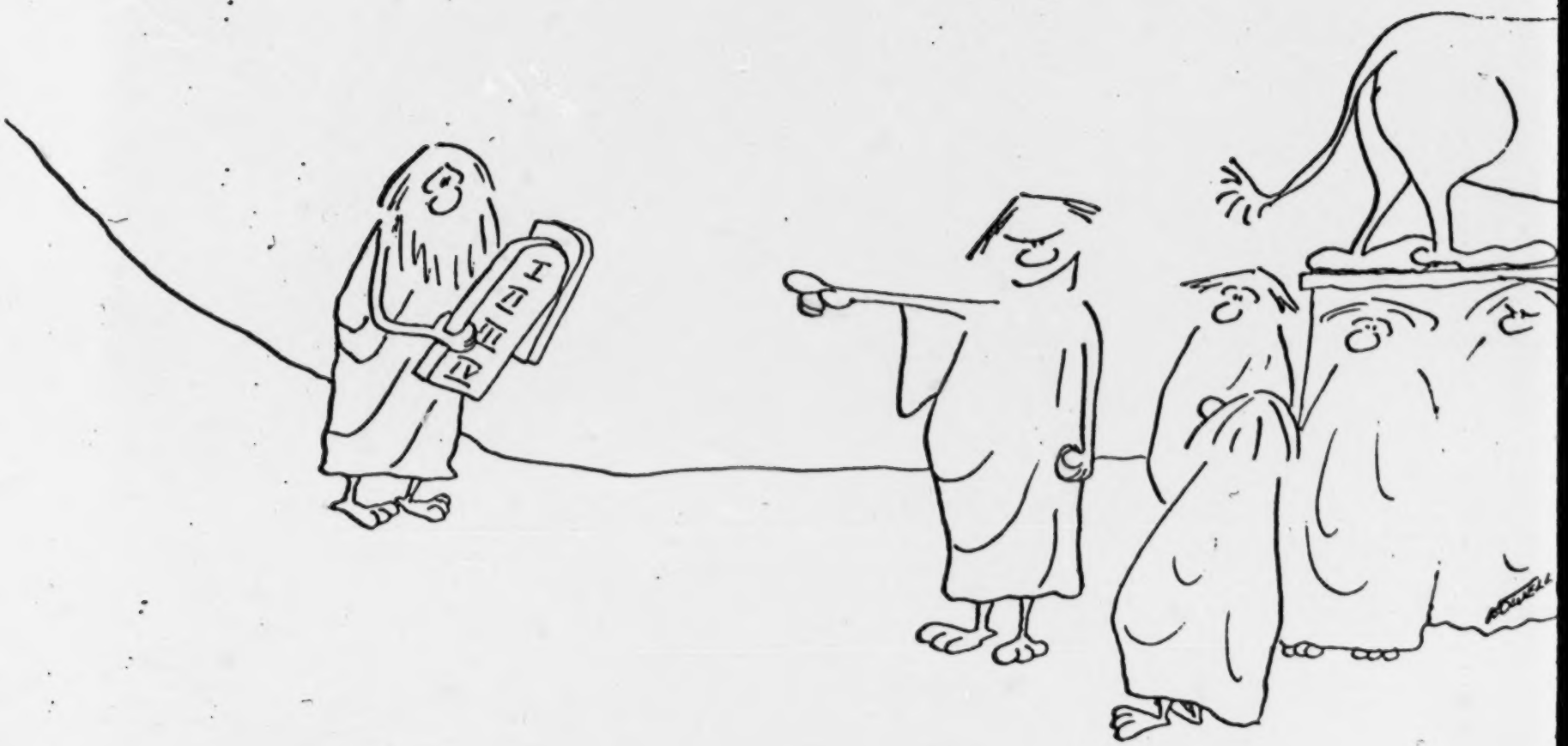
"Planning cities sure is complicated."

"I recognize more around me."

"Boy this is fun!"

We also have worked on developing our own simulation activities. The team is learning from them and plans to use simulation devices in our final, polished, and presentable project.

A most valuable device, and perhaps more directly in line with our specific objectives and I.L.O's, is the community case study.



But what are his ILO's ?

*intended learning outcomes

During this past year our students have planned their own studies in the community. These studies related to geography, history, sociology, political science, ecology, anthropology, and economics (we did not tell students this, but they did!) Significantly, young Canadians are very interested in this type of activity. Activities ranged all the way from passive door-to-door surveys, to positively providing better opportunities for the elderly to enjoy themselves. A student's comment sums up the value of this work - "I'm beginning to learn what this community is all about."

The intention of the project, vis à vis the curriculum in a secondary school program, is to supplement and to recommend the best possible use of the wealth of existing materials. (Please refer to the appendix attached.) That which we have outlined in the previous pages is not a program which has used Winnipeg as a model transferable to other Canadian urban settings. Visibly, it is a suggested process which can be applied by educators to any urban setting.

It has taken most of the year for us to develop an atmosphere in which we can work harmoniously. There are various reasons for this (off hand, we can think of four): one member was touring Southeast Asia for three months on a UNESCO fellowship; three members have worked as a team for the past five years, which definitely placed the fourth team member at a disadvantage, (the fourth member, by the way, was the author of the original proposals submitted to P.C.W.); also, it is common for any group to experience a period in which relationships develop to the point which will allow its members to work comfortably toward a common goal.

Our approach to the stated problem is simply one that seems to meet our idea of the developing social and personal needs of Canada's young people. Changes were made when we felt that we could meet these social and personal needs more effectively. These changes have resulted as we considered the

possibilities of facilitating students' growth and development within their urban environment.

"This year has seen the team seasoned ... casting aside the cookbook approach ... tasting success and failure ... stewing about the results ..."

What we have described in this paper reflects the current feelings and thoughts of the team.

What have we gained personally? We are each individuals with our own style, philosophy and idiosyncrasies. Of course, in the team we have been made more aware of these. Our "bull sessions" were in themselves a study in group therapy and peer group relations. If professional development means becoming more aware of meeting these needs, (isn't this our job as educators?), then we would claim that we are developing as a team of professionals, both in regards to curriculum and personal development.

Our experiences of the past year enable us to make some concrete suggestions to Project Canada West and other teacher curriculum development teams. Planning time is more profitably used if it is provided relatively frequently (once a month) and for about two days at a time. Absence from our regular school responsibilities for any longer periods of time causes unnecessary disruption for our students. Related to this recommendation is the suggestion that the team investigate the feasibility of having intern teachers (possibly from the Faculty of Education) work with it. Not only would this provide for continuity in our school programs during planning periods, but it would also serve to keep the team aware of new ideas and trends. To date, the traditional substitute teachers have proved relatively ineffective. Some comments made by them are indicative of the difficulty of assimilating them into our program.

"This is not Canadian History!"

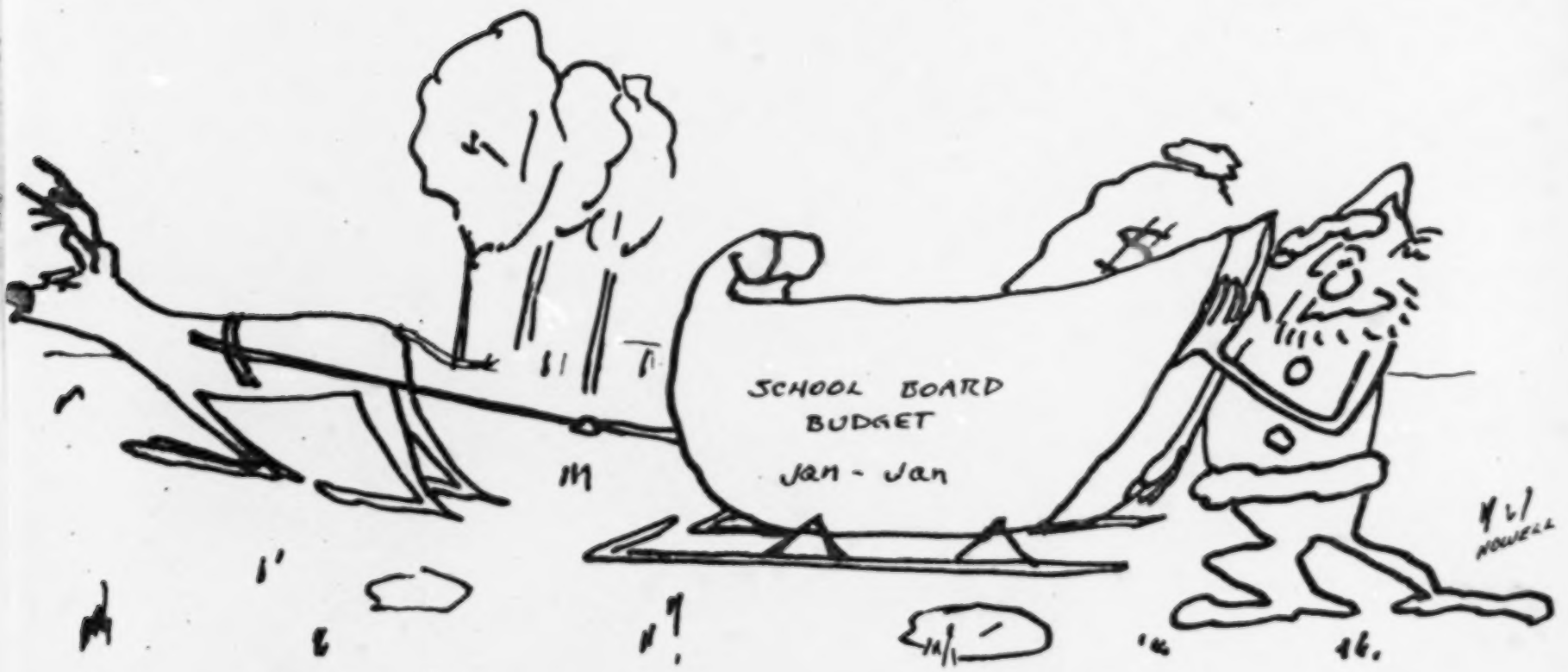
"People who have a program like this should not be away!"

"What the_____is this stuff?"

"As long as you have them lined up with something to do I won't have to do anything."

It would be of considerable value to have regular substitute teachers, or more effectively, "interns", who would help in the development of the program.

Another problem is that the budget year of P.C.W. does not coincide with that of the school divisions. It would be easier for all if these were co-ordinated.




It's hard to budge it in June!

Our team has had problems obtaining materials such as simulation games from the U.S.A. The difficulty lies with the Canadian Customs. We have been forced to pay import duties on some materials, whereas schools would not. Our explanations as to the objectives, operation, and corporate structure of P.C.W. do not impress the federal authorities; their comments are indications of the narrow point of view they hold.

"What is the seating capacity of any classroom facilities P.C.W. may have", or,

"Does P.C.W. employ paid instructors?"

Perhaps P.C.W. and C.S.F. would provide a copy of the character of articles of incorporation which clearly establishes that the Project Canada West is in fact established solely for the purposes specified in tariff item 69605-1.

Plans for Next Year

The first half of 1971 has been a period for thinking, reading, discussion, the interviewing of specialists, and working on special classroom projects. The 1971-1972 school year will see us developing further our simulation activities and background materials that can be used in classrooms.

In keeping with the "In-thing" of simulation we have decided to concentrate efforts on this most effective teaching technique. We feel our efforts in this area can be justified as simulation means, according to Raser "greater emphasis on rationalized decision-making procedures; increased recognition that understanding of social phenomena requires examining complex systems of interaction rather than isolated entities; a growing tendency to approach problems from the perspective of several disciplines simultaneously; and the increased popularity of a philosophy of the social sciences that insists on multivariant analysis, rigorous specification of assumptions and relationships, and theories that are

temporarily dynamic rather than static. A simulation is an attempt...to prove (the participant) with information about real states of the system." Raser continues "simulations also may be used to create theory where none existed; and central to the process of simulation, are disciplined abstraction and simplification."

Our experiments with the use of simulation in the classroom have proven that this device is indeed successful. However, no one existing simulation, in our minds, has the ingredients that will suitably satisfy our objectives. One has to be developed and, with the assitance of our consultants and students, one will be developed.

The team is convinced that decision making can only be a worthwhile activity if those making decisions have adequate knowledge. It is our intention to develop this knowledge with background material on urbanization based on two areas: research work in the field and the consideration of available resource materials. We feel that we will also be able, in the next year, to provide suitable guidelines for teachers so that they may begin in the 1972-1973 school year to use our materials.

A third area of development will be the itemizing of significant types of case studies. These will support work in the simulation.

We envisage an open-ended type of simulation activity, perhaps made up of several activities based on case studies. We define a case study as the analysis of a situation in isolation, with a variety of processes. Written material and films of field observation may be suitable platforms from which to launch case studies. By field work we refer to the observation of a number of things that in themselves would be case studies. Field work, then involves a study of the whole, or the network.

In conclusion, we are developing programs and activities as teachers within the "regular" classroom situation. As teachers, we find ourselves following the basic objectives laid down by the present curriculum, but departing greatly from the suggested method of approach outlined in that curriculum. Of course, as our development progresses, we feel that next year will be no exception as we attempt to develop a suitable systematic and definable approach to field work and case studies.

BUDGET JULY, 1971 - JULY, 1972

| | | |
|---|---|---|
| 1. | Release time for project personnel shared on 50-50 basis with the Winnipeg School Division and the Seven Oaks School Division (respectively). | |
| | 3 teachers C.H.S. (our share) | 1,000.00 |
| | 1 teacher W.K.C.I. | 250.00 |
| 2. | Materials | |
| | Simulations, books, journals | 250.00 |
| | Case study materials and expenses | 500.00 |
| | Field Work (transportation) | 750.00 |
| 3. | Consultants (honoraria) | 1,000.00 |
| 4. | Conferences, seminars, travel and expenses for project personnel. | 1,500.00 |
| | | $5,250.00 |

# BIBLIOGRAPHY

## APPENDIX A:

1. Bellan, Ruben C., The Evolving City, Vancouver, Copp Clark, 1971.

   Dr. Bellan reviews the historical geographical, and technological factors that have influenced greatly the development and growth of the European-American city. His analyses of those services that the city provides for its inhabitants as well as its outside sphere of influence points out the importance of wise and effective urban administration. The book considers the role of cities in national development and the evolution of public policy in regard to urban growth.

   No solutions to urban problems are offered for these, according to Dr. Bellan, are bound to be personal and non objective. The Evolving City is written to furnish readers with elements helpful in the formulation of views and approaches of their own.

2. Billings, W.D., Plants and the Ecosystem, Belmont, California, Wadsworth Publishing Co.

   Although oriented toward botanical studies this book provides us with an insight into the nature of ecosystems and the relationship of man's welfare to the existing ecosystems.

3. Carver, H., Cities in the Suburbs, Toronto, University of Toronto Press, 1962.

   A Canadian analysis of suburbs, their growth and problems. The stress is on attitudes toward shaping and planning land use and resources.

4. Hall, Peter, The World Cities, World University Library, Toronto, McGraw-Hill Book Co.

   Hall focuses on seven major world metropolitan centres. It suggests a method of analysis of problems and a viewing of the similarities in solutions which on a smaller scale would be very useful; apply to Canadian Urban Centres.

5. Kormondy, E.J., Concepts of Ecology, Englewood Cliffs, New Jersey, Prentice-Hall, Inc. 1969.

   Kormondy develops his concepts of ecology by searching into the nature of things, asking questions, analyzing data, generalizing and predicting. The unifying theme is the structure and function of ecosystems, with reference to energy flow, nutrient cycling, population growth and regulation, and community organization and dynamics. This book traces many of our major social problems, such as population and pollution, and shows how these problems demand an understanding of man's relationship to his environment.

6. Lynch, Kevin, The Image of the City, Cambridge, Mass., The M.I.T. Press, 1960.

   A source book of ideas for evaluating the form of the city. The need to recognize and pattern our surroundings is so crucial and is so well rooted in the past, that recognition of this pattern has wide practical and emotional importance to the individual.

7. Marsh, Leonard, Communities in Canada, Toronto, McClelland and Stewart Ltd., 1970.

   Marsh has provided a vast array of case studies, field exercises, and a multitude of their approaches to aid students. He stresses the need to close the gap between technological advances in our economy and the urban political process which must govern it.

8. Tietze, F.J. and McKeown, J.E., The Changing Metropolis, Boston, Houghton Mifflin Company, 1964.

   A useful series of papers on the problems of the big city in North America. You might find its case studies of social-urban problems interesting.

9. Postman, N. and Weingartner, C., Teaching as a Subversive Activity, New York, Delaconte Press, 1969.

   A book devastating to traditional classroom methods. Valuable in clarifying process alternatives. A better guide to humanizing our work in schools will be hard to find.

10. Putnam, G.R. et al, A Geography of Urban Places, Toronto, Methuen, 1970.

    This advanced level geography book is a collection of papers by urban geographers, planners, and economists.

11. Raser, John R., Simulation and Society, Boston, Allyn and Bacon Inc. 1969.

This book is designed to introduce social scientists to a sphere of activity with which they may not be familiar, that of simulation and gaming. It is particularly designed for undergraduate and graduate students in sociology, history, political science, psychology, economics, and anthropology, disciplines in which the simulation technique is becoming a major research and teaching device.

12. Terry, Mark, Teaching for Survival, New York, Ballantine Books, 1971.

Mr. Terry considers the ecology of the natural environment. He offers to teachers valuable creative suggestions to develop sensory awareness in students and teachers.

13. Whittaker, R.H., Communities and Ecosystems, Toronto Collier MacMillan Canada, Ltd., 1970.

The aspects of ecology that are dealt with in this book are integrated around the concepts of communities as assemblages of different species with one another and ecosystems as functional systems formed by communities and their environments. Communities and Ecosystems deals with the structure of natural communities, the functions of ecosystems, and the problems of man's relation to the biosphere.

14. Whyte, William H., The Last Landscape, Garden City, N.Y., Doubleday and Co., 1970.

A source book of views on the urban sprawl of today. Whyte presents many alternatives for dealing with the urban problems and situation that we are too often willing to put aside.

Every chapter suggests ways of looking at, understanding and getting involved in our city communities.

15. Winter, Eric, Urban Landscape, Scarborough, Ontario, Bellhaven House Ltd., 1969.

Designed for Canadian students starting a study of the urban area. The teacher's role throughout is cast as co-ordinator of student learning activities. This book stresses observation of economic sociological and historical phenomena.

16. Wolforth and Leigh, R., Urban Prospects, Toronto, McClelland and Stewart Ltd., 1971.

Structure of Canadian urban themes presented in a well organized fashion. Many varied field activities and exercises that are aimed at developing observational skills and techniques of urban study.

APPENDIX B. BIBLIOGRAPHY OF SIMULATIONS TESTED

1. Callahan, Caswell, McClellan, Mullen, and Savage: Urban Dynamics, originally published as Ghetto: The Urban Race Game (Urbandyne, 5659 South Woodlawn Ave., Chicago, Illinois 60637)

   Most games of this nature stress economics and land use. This is a game where groups interact in a power struggle for control of a city government. The historical perspective is an important concept in this game. Although the game has no fixed objective and is open ended in nature, some important concepts in addition to the above are considered, including population, increase, education, employment, social security and taxation. Significantly, a large group can participate in this game - the larger the better. Most students enjoy the chance to negotiate loans with banks, establishment of welfare payments, costs of transport, property tax, and electing of a city council.

2. Helmer, Dr. Olaf et al Future (Oakland, Cal., Kaiser Aluminum and Chemical Corp., 1966)

   The purpose of the game is to anticipate probable events of the future. The game requires player's active participation in dealing with three factors which simulate possible models for forecasting and planning the future:

   1) the known, yet continuously changing probability of events; and

   2) the possible human influences on events; and

   3) chance.

3. Hubbell, Stephen P., Extinction: The Game of Ecology (Stamford, Conn.: Sinauer Associates, Inc. 1970)

   The game is a simplified model of nature that develops an appreciation for the ecological interdependence of all living things. Each player or team plays the part of a species whose goal is to survive while its rivals become extinct. Extinction simulates several ecological events - some natural and others caused by man.

4. Lawson, Barry R. New Town: An Urban Land Use and Development Game, (Convent Station, New Jersey 07961: Box 95, 1969).

   New Town is a gaming model which can be converted into a complex device which stimulates and encourages an understanding of many of the important development and land use questions facing contemporary urban planning officials every day. It is essentially an economic game, which does not deal effectively with social and aesthetic values of people and political groups. The game affords an opportunity for players to learn where a consideration of these values is relevant in the development process.

5. Rasmussen, F.A., The Pollution Game, (Burlington, Mass.) Houghton Mifflin Co., 1971)

   This game, developed by Educational Research Council, allows students to simulate, in a game, the progressive contamination of our environment. During this game, students will experience the antagonisms and frustrations of trying to change technology and social behaviour.